

NWS FORM E-19 (COVER)

U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL WEATHER SERVICE

REPORT ON RIVER GAGE STATION

REVISED, PRINTED DATES: 04/08/2010, 08/22/2010

LOCATION: PORTIS

STREAM: NORTH FORK SOLOMON

BASIN: SOLOMON 12

HSA: GID

REFERENCES:

USGS STATION DESCRIPTION - 1/11/02  
USGS STATION DESCRIPTION - 2/01/2006  
USGS STATION DESCRIPTION - 7/14/80  
WB FORM 531-4 - 4/29/65

ABBREVIATIONS:

|                       |  |
|-----------------------|--|
| BM - bench mark       | EPA - Environmental Protection Agency          |
| DS - downstream       | IBWC - International Boundary and Water Comm.  |
| US - upstream         | MSRC - Mississippi River Commission            |
| HW - high water       | MORC - Missouri River Commission               |
| LW - low water        | NOAA - National Oceanic and Atmospheric Admin. |
| RB - right bank       | NOS - National Ocean Survey                    |
| LB - left bank        | NWS - National Weather Service                 |
| MGL - mean gulf level | TVA - Tennessee Valley Authority               |
| MLW - mean low water  | USACE - U.S. Army Corps of Engineers           |
| MSL - mean sea level  | USBR - U.S. Bureau of Reclamation              |
| MLT - mean low tide   | USGS - U.S. Geological Survey                  |
| MT - mean tide        | USWB - U.S. Weather Bureau                     |
| WQ - water quality    | NGVD - National Geodetic Vertical Datum        |
| RM - reference mark   | NAD - North American Datum                     |
| RP - reference point  |  |

LOCATION IDENTIFICATION: PTIK1  
NWS INDEX NUMBER: 14-6511-2  
USGS NUMBER: 06872500

MAP OF GAGE LOCATION

LATITUDE: 39 33 18  
LONGITUDE: 98 41 31

SOURCE: USGS DESC. 2/01/2006

LOCATION: NORTH FORK SOLOMON NEAR PORTIS, KS  
ID: PTIK1 HSA: GID

Revised, Printed Dates: 04/08/2010, 08/22/2010  
NWS FORM E-19 PAGE 1: GAGE MAP

## BENCHMARKS

ELEVATION OF GAGE ZERO: 1490.710      VERTICAL DATUM: NGVD 1929  
LEVELING AGENCY AND DATE: 9/7/2007      CHECKBAR: 43.940  
RATING AGENCY: USGS

| BENCHMARK | DESCRIPTION  | GAGE ZERO | DATUM    |
|-----------|--|-----------|----------|
| MP2       | EARTH AUGER BIPOD 5 FT DOWNSTREAM OF ORIFICE.  | 4.602     | 1495.312 |
| MP3       | CHISELED "V" ON THE BRIDGE HANDRAIL JUST SOUTH OF THE WIRE WEIGHT.   | 45.185    | 1535.895 |
| MP4       | EARTH AUGER BI-POD LOCATED AT, BUT NOT ATTACHED TO THE ORIFICE.  | 4.208     | 1494.918 |
| RM1       | A STANDARD BRONZE TABLET SET IN TOP LEFT DOWNSTREAM HUBGUARD OF BRIDGE.<br>ELEV ABOVE GAGE ZERO - 41.906 FT. | 41.906    | 1532.616 |
| RM2       | A STANDARD BRONZE TABLET SET IN TOP OF RIGHT UPSTREAM HUBGUARD OF BRIDGE.                                    | 41.899    | 1532.609 |
| RM3       | A 3/8 INCH LAG BOLT IN A POWER POLE 100 FT NORTH OF THE GAGE.  | 42.131    | 1532.841 |

LOCATION: NORTH FORK SOLOMON NEAR PORTIS, KS  
ID: PTIK1      HSA: GID

Revised, Printed Dates: 04/08/2010, 08/22/2010  
NWS FORM E-19 PAGE 2: BENCHMARKS

## GAGES

DCP

TELEM

NESS ID: CE64F55E  
 OWNER: USGS  
 REPORT TIME: 00:38  
 INTERVAL: 60

TYPE OF TELEMETRY: Unk  
 OWNER: Unk  
 PHONE NUMBER:  
 INTERVAL:  
 PAYOR/COST OF LINE: Unk / \$

| GAGE TYPE  | OWNER | MAINTENANCE | BEGAN      | ENDED      | GAGE LOCATION/REMARKS  |
|------------|-------|-------------|------------|------------|--|
| wireweight | USGS  | USGS        | 09/17/1945 | 03/18/1964 | WIRE WEIGHT GAGE OPERATED 9.0 MILES DOWNSTREAM AND PUBLISHED AS "NEAR DOWNS". SITE WAS ABANDONED AND GAGE MOVED TO PRESENT SITE DUE TO PROBABLE BACKWATER FROM GLEN ELDER RESERVOIR.                   |
| Unk        | USGS  | USGS        | 10/01/1964 | 02/23/1993 | RECORDING GAGE INSTALLED BY USGS. NWS BEGAN JOINT USE OF STATION FOR RIVER REPORTING AT OCCASIONAL HIGH STAGES. STATION ESTABLISHED IN LIEU OF DOWNS 3W WHICH IS LOCATED IN THE GLEN ELDER FLOOD POOL. |
| bubble     | USGS  | USGS        | 10/22/1984 | 07/26/1994 | A SUTRON 8004 DCP AND SHAFT ENCODER WAS INSTALLED IN 1984. THE SUTRON 8004 DCP WAS REPLACED WITH A SUTRON 8200 DCP IN 1994.  |
| tipping    | USGS  | USGS        | 07/15/1992 | 12/31/2050 | INSTALLED A TIPPING BUCKET RAIN GAUGE.   |
| bubble     | USGS  | USGS        | 07/26/1994 |            | A SUTRON 8200 DCP INSTALLED.   |
| bubble     | USGS  | USGS        | 09/14/1995 |            | PRESSURE TRANSDUCER AND DATALOGGER/TRANSMITTER INSTALLED, AND THE MANOMETER, GRAPHIC RECORDER AND SHAFT ENCODER WERE REMOVED.  |
| crest      | USGS  | USGS        | 06/15/2000 |            | A CREST STAGE INDICATOR PIPE WAS INSTALLED 6/15/00.  |
| crest      | USGS  | USGS        | 02/28/2005 | 12/31/2050 | INSTALLED CSI PIPE ON PIER NEAR LEFT END OF BRIDGE.  |

LOCATION: NORTH FORK SOLOMON NEAR PORTIS, KS  
 ID: PTIK1 HSA: GID

Revised, Printed Dates: 04/08/2010, 08/22/2010  
 NWS FORM E-19 PAGE 3: GAGES

# HISTORY

| PUBLICATION/LOCATION OF RECORDS | STARTING DATE | ENDING DATE |
|---------------------------------|---------------|-------------|
| WRD KS (AS "NEAR DOWNS")        | 09/01/1945    | 09/30/1964  |
| WRD KS                          | 10/01/1964    |             |

| TYPE OF GAGE | OWNER | STARTING DATE | ENDING DATE |
|--------------|-------|---------------|-------------|
| wireweight   | USGS  | 09/17/1945    | 03/18/1964  |
| Unk          | USGS  | 10/01/1964    | 02/23/1993  |
| bubble       | USGS  | 10/22/1984    | 07/26/1994  |
| tipping      | USGS  | 07/15/1992    | 12/31/2050  |
| bubble       | USGS  | 07/26/1994    |             |
| bubble       | USGS  | 09/14/1995    |             |
| crest        | USGS  | 06/15/2000    |             |
| crest        | USGS  | 02/28/2005    | 12/31/2050  |

| ZERO ELEVATION | STARTING DATE |
|----------------|---------------|
| 1490.710       | 01/01/1929    |

LOCATION: NORTH FORK SOLOMON NEAR PORTIS, KS  
ID: PTIK1 HSA: GID

Revised, Printed Dates: 04/08/2010, 08/22/2010  
NWS FORM E-19 PAGE 4: HISTORY

## CRESTS

FLOOD STAGE: 15.00 ACTION STAGE: 13.00 BANKFULL STAGE: 15.00  
 FLOOD FLOW: 2980 ACTION FLOW: 2200

| DATE OF<br>CREST | TIME<br>LST | CREST<br>(ft) | FLOW<br>(CFS) | FROM HIGH<br>WATERMARKS | BASED ON<br>OLD DATUM | CAUSED BY<br>ICE JAM | REMARKS |
|------------------|-------------|---------------|---------------|-------------------------|-----------------------|----------------------|---------|
| 08/27/1946       | UNDEF       | -0.99         | 7250          |                         |                       |                      |         |
| 06/07/1947       | UNDEF       | -0.99         | 8900          |                         |                       |                      |         |
| 06/18/1948       | UNDEF       | -0.99         | 2310          |                         |                       |                      |         |
| 06/14/1949       | UNDEF       | -0.99         | 15600         |                         |                       |                      |         |
| 08/13/1950       | UNDEF       | -0.99         | 22500         |                         |                       |                      |         |
| 07/12/1951       | UNDEF       | 30.41         | 35700         |                         |                       | X                    |         |
| 07/15/1952       | UNDEF       | -0.99         | 4940          |                         |                       |                      |         |
| 07/21/1953       | UNDEF       | -0.99         | 3720          |                         |                       |                      |         |
| 06/16/1954       | UNDEF       | -0.99         | 5560          |                         |                       |                      |         |
| 06/18/1955       | UNDEF       | -0.99         | 14000         |                         |                       |                      |         |
| 06/22/1956       | UNDEF       | -0.99         | 4620          |                         |                       |                      |         |
| 06/17/1957       | UNDEF       | -0.99         | 26500         |                         |                       |                      |         |
| 10/23/1957       | UNDEF       | -0.99         | 2200          |                         |                       |                      |         |
| 05/05/1959       | UNDEF       | -0.99         | 1280          |                         |                       |                      |         |
| 10/06/1959       | UNDEF       | -0.99         | 5300          |                         |                       |                      |         |
| 06/07/1961       | UNDEF       | -0.99         | 10500         |                         |                       |                      |         |
| 08/05/1962       | UNDEF       | -0.99         | 3970          |                         |                       |                      |         |
| 09/22/1963       | UNDEF       | -0.99         | 5500          |                         |                       |                      |         |
| 08/21/1964       | UNDEF       | -0.99         | 840           |                         |                       |                      |         |
| 05/25/1965       | UNDEF       | 13.66         | 3160          |                         |                       |                      |         |
| 02/09/1966       | UNDEF       | 10.72         | 1990          |                         |                       |                      |         |
| 07/29/1967       | UNDEF       | 20.30         | 8550          |                         |                       |                      |         |
| 09/18/1967       | UNDEF       | 18.96         |               |                         |                       |                      |         |
| 08/16/1968       | UNDEF       | 22.95         | 10200         |                         |                       |                      |         |
| 05/22/1969       | UNDEF       | 17.08         | 5390          |                         |                       |                      |         |
| 06/13/1970       | UNDEF       | 6.73          | 632           |                         |                       |                      |         |
| 07/03/1971       | UNDEF       | 18.12         |               |                         |                       |                      |         |
| 09/02/1971       | UNDEF       | 18.12         | 6230          |                         |                       |                      |         |
| 05/24/1972       | UNDEF       | 7.73          | 799           |                         |                       |                      |         |
| 09/29/1973       | UNDEF       | 16.47         | 4910          |                         |                       |                      |         |
| 10/11/1973       | UNDEF       | 18.74         | 6720          |                         |                       |                      |         |
| 06/22/1975       | UNDEF       | 17.78         | 4400          |                         |                       |                      |         |
| 05/23/1976       | UNDEF       | 7.68          | 864           |                         |                       |                      |         |
| 09/05/1977       | UNDEF       | 13.40         | 3030          |                         |                       |                      |         |
| 07/23/1978       | UNDEF       | 9.12          | 1300          |                         |                       |                      |         |
| 03/23/1979       | UNDEF       | 18.28         | 4500          |                         |                       |                      |         |
| 04/05/1980       | UNDEF       | 6.79          | 475           |                         |                       |                      |         |
| 07/03/1981       | UNDEF       | 10.50         | 1420          |                         |                       |                      |         |
| 05/13/1982       | UNDEF       | 19.88         | 5730          |                         |                       |                      |         |
| 05/20/1983       | UNDEF       | 8.51          | 726           |                         |                       |                      |         |
| 04/23/1984       | UNDEF       | 9.76          | 1000          |                         |                       |                      |         |
| 05/15/1985       | UNDEF       | 12.40         | 2160          |                         |                       |                      |         |
| 08/05/1986       | UNDEF       | 9.59          | 1290          |                         |                       |                      |         |
| 04/15/1987       | UNDEF       | 17.88         | 4450          |                         |                       |                      |         |
| 08/12/1988       | UNDEF       | 11.30         | 1880          |                         |                       |                      |         |

LOCATION: NORTH FORK SOLOMON NEAR PORTIS, KS  
 ID: PTIK1 HSA: GID

Revised, Printed Dates: 04/08/2010, 08/22/2010  
 NWS FORM E-19 PAGE 5: CRESTS

| DATE OF<br>CREST | TIME<br>LST | CREST<br>(ft) | FLOW<br>(CFS) | FROM HIGH<br>WATERMARKS | BASED ON<br>OLD DATUM | CAUSED BY<br>ICE JAM | REMARKS                          |
|------------------|-------------|---------------|---------------|-------------------------|-----------------------|----------------------|----------------------------------|
| 07/19/1989       | UNDEF       | 14.09         | 2870          |                         |                       |                      |                                  |
| 05/16/1990       | UNDEF       | 12.70         | 2360          |                         |                       |                      |                                  |
| 05/27/1991       | UNDEF       | 8.05          | 866           |                         |                       |                      |                                  |
| 06/06/1992       | UNDEF       | 14.73         | 3120          |                         |                       |                      |                                  |
| 07/21/1993       | UNDEF       | 23.43         | 9180          |                         |                       |                      | REPEATED HEAVY RAINS-SUMMER 1993 |
| 03/05/1994       | UNDEF       | 12.58         | 2080          |                         |                       |                      |                                  |
| 05/29/1995       | UNDEF       | 23.00         | 8730          |                         |                       |                      |                                  |
| 08/05/1996       | UNDEF       | 12.12         | 1900          |                         |                       |                      |                                  |
| 11/17/1996       | UNDEF       | 19.87         | 5800          |                         |                       |                      |                                  |
| 07/27/1998       | UNDEF       | 20.54         | 5990          |                         |                       |                      |                                  |
| 05/05/1999       | UNDEF       | 13.48         | 2170          |                         |                       |                      |                                  |
| 07/24/2000       | UNDEF       | 6.52          | 399           |                         |                       |                      |                                  |
| 05/30/2001       | UNDEF       | 18.92         | 4930          |                         |                       |                      |                                  |
| 05/28/2002       | UNDEF       | 7.73          | 653           |                         |                       |                      |                                  |
| 09/12/2003       | UNDEF       | 8.12          | 729           |                         |                       |                      |                                  |
| 07/09/2004       | UNDEF       | 5.89          | 262           |                         |                       |                      |                                  |
| 06/10/2005       | UNDEF       | 10.35         | 1320          |                         |                       |                      |                                  |
| 08/18/2006       | UNDEF       | 8.48          | 815           |                         |                       |                      |                                  |
| 08/02/2007       | UNDEF       | 12.27         | 1670          |                         |                       |                      |                                  |
| 05/25/2008       | 05:30       | 25.71         | 16304         |                         |                       |                      |                                  |
| 08/24/2008       | 16:00       | 17.15         |               |                         |                       |                      |                                  |
| 10/24/2008       | 00:45       | 21.25         |               |                         |                       |                      |                                  |

LOCATION: NORTH FORK SOLOMON NEAR PORTIS, KS  
ID: PTIK1 HSA: GID

Revised, Printed Dates: 04/08/2010, 08/22/2010  
NWS FORM E-19 PAGE 5-2: CRESTS

# LOW WATER RECORDS

| DATE OF<br>LOW WATER | STAGE<br>(ft) | FLOW<br>(CFS) | REMARKS                              |
|----------------------|---------------|---------------|--------------------------------------|
| 06/01/1955           | 0.00          | 0             | NO FLOW AT TIME IN 1955/56 AT DOWNS. |
| 07/29/2006           |               | 0             | Actual flow was 0.32 CFS             |
| 10/08/2006           |               | 3             | Actual flow is 2.6 CFS.              |

LOCATION: NORTH FORK SOLOMON NEAR PORTIS, KS  
ID: PTIK1 HSA: GID

Revised, Printed Dates: 04/08/2010, 08/22/2010  
NWS FORM E-19 PAGE 6: LOW WATER



CONDITIONS AFFECTING FLOW

MILES ABOVE MOUTH: 27.0      DRAINAGE AREA: 2315.0      POOL STAGE: 0.0

STREAM BED: COMPOSED MAINLY OF SAND.

REACH: VICINITY OF GAGE. DETERMINED FROM PROFILE STUDY AT CURRENT SITE AND DATUM.

REGULATION: REGULATED BY COMPACTED EARTH-FILLED DAM TO STORE WATER FOR FLOOD CONTROL AND IRRIGATION IN KIRWIN UNIT, MISSOURI RIVER BASIN PROJECT.

DIVERSION: CONSIDERABLE DIVERSION UPSTREAM FOR IRRIGATION.

WINTER: CHANNEL SUBJECT TO FREEZING.

TOPOGRAPHY: CHANNEL IS STRAIGHT ABOVE GAGE SITE, PASSES THE BRIDGE AT AN ANGLE OF 85

REMARKS: TOPOGRAPHY: FLAT AGRICULTURAL LAND ALL QUADS WITH TOWN OF PORTIS SLIGHTLY ELEVATED TO THE NORTH OF THE GAGE.

LOCATION: NORTH FORK SOLOMON NEAR PORTIS, KS  
ID: PTIK1      HSA: GID

Revised, Printed Dates: 04/08/2010, 08/22/2010  
NWS FORM E-19 PAGE 7: CONDITIONS

| DAMAGE |  |
|--------|--|
| STAGE  | AREAS AFFECTED   |
| 15.00  | OVERFLOWS WILL OCCUR ON RIGHT BANK (SOUTHEAST BANK) INTO CROP AND PASTURE BOTTOM LAND. THERE IS NO IMMEDIATE OR DIRECT THREAT TO PROPERTY BUT OSBORNE COUNTY ROAD #362 ON THE SOUTH SIDE UPSTREAM WOULD LIKELY HAVE WATER OVER IT. |

Revised, Printed Dates: 04/08/2010, 08/22/2010  
NWS FORM E-19 PAGE 8: DAMAGE

# RIVER STAGE DATA

|  |      |                  |
|--|------|------------------|
|  | 40-  |                  |
|  | ---- |                  |
|  | ---- |                  |
|  | 35-  |                  |
|  | ---- |                  |
|  | ---- |                  |
|  | 30-  | 30.41 07/12/1951 |
|  | ---- |                  |
|  | ---- |                  |
|  | 25-  | 25.71 05/25/2008 |
|  | ---- |                  |
|  |      | 23.43 07/21/1993 |
|  |      | 22.95 08/16/1968 |
|  |      | 21.25 10/24/2008 |
|  | 20-  | 20.54 07/27/1998 |
|  | ---- |                  |
|  |      | 19.88 05/13/1982 |
|  |      | 18.96 09/18/1967 |
|  |      | 17.88 04/15/1987 |
|  |      | 16.47 09/29/1973 |
| 15.00 - OVERFLOWS WILL OCCUR ON RIGHT BANK (SOUTHEAST BANK) INTO CROP AND PASTURE BOTTOM LAND. THERE IS NO IMMEDIATE OR DIRECT THREAT TO PROPERTY BUT OSBORNE COUNTY ROAD #362 ON THE SOUTH SIDE UPSTREAM WOULD LIKELY HAVE WATER OVER IT. | 15-  |                  |
|  | ---- |                  |
|  |      | 14.73 06/06/1992 |
|  |      | 13.66 05/25/1965 |
|  |      | 12.70 05/16/1990 |
|  |      | 11.30 08/12/1988 |
|  | 10-  | 10.72 02/09/1966 |
|  | ---- |                  |
|  |      | 9.76 04/23/1984  |
|  |      | 8.51 05/20/1983  |
|  |      | 7.73 05/24/1972  |
|  |      | 6.79 04/05/1980  |
|  | 5-   | 5.89 07/09/2004  |
|  | ---- |                  |
|  | ---- |                  |
|  | 0-   |                  |
|  | ---- |                  |
|  |      | -0.99 08/27/1946 |
|  | ---- |                  |
|  | -5-  |                  |
|  | ---- |                  |
|  | ---- |                  |

REACH: VICINITY OF GAGE. DETERMINED FROM PROFILE STUDY AT CURRENT SITE AND DATUM.

ELEVATION ZERO: 1490.71

LOCATION: NORTH FORK SOLOMON NEAR PORTIS, KS

ID: PTIK1

HSA: GID

Revised, Printed Dates: 04/08/2010, 08/22/2010

NWS FORM E-19 PAGE 9: STAFF

# CONTACTS

| SQ | CONTACT/REMARKS             | PHONE        |
|----|-----------------------------|--------------|
| 1  | Darrol Mitchell             | 785-346-2287 |
| 2  | USGS Kansas<br>MAINTENANCE. | 785-628-8918 |

LOCATION: NORTH FORK SOLOMON NEAR PORTIS, KS  
ID: PTIK1 HSA: GID

Revised, Printed Dates: 04/08/2010, 08/22/2010  
NWS FORM E-19 PAGE 10: CONTACTS